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Laboratory Will Serve Shelterbelt Region

Shelterbelts have long been planted on the northern Great Plains to reduce the destructive force of strong winds. These belts of trees and shrubs protect the soil from wind erosion, reduce wind damage to crops, provide shade and shelter for farmsteads and feed lots, provide food and cover for wildlife, and add beauty to the otherwise nearly treeless Plains.

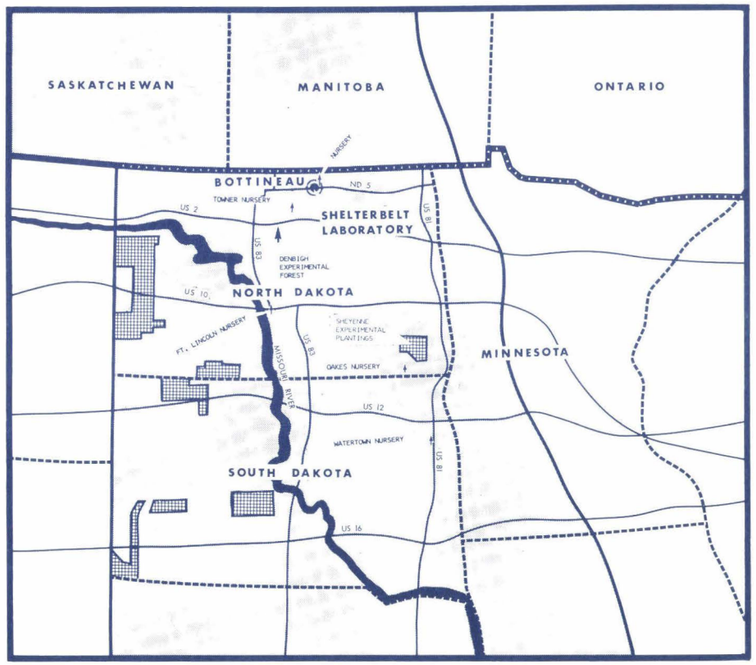
The Lake States Forest Experiment Station conducts research to provide new knowledge that will help Plains residents establish, maintain, and protect their shelterbelts. This research effort is centered at the Station's Shelterbelt Laboratory on the campus of the North Dakota School of Forestry, Bottineau, North Dakota, and is conducted in cooperation with private landowners and public agencies. The scientists who work in this modern laboratory have projects in nurseries and experimental outplantings on private and public land in North and South Dakota. They also maintain an experimental forest at Denbigh, North Dakota. These field plantings, coupled with the facilities of a modern laboratory, make up a well-rounded program in shelterbelt research.

The Shelterbelt Laboratory at Bottineau was completed in 1963. It has 5,800 square feet of floor space, divided into 5 laboratories, 9 offices, and a library-conference room. The laboratory provides facilities for a staff of 10 scientists who will be responsible for developing and disseminating new knowledge in shelterbelt culture. Experiment Station scientists are conducting a number of projects to learn more about the establishment and management of shelterbelts in the Northern Great Plains. These include studies in tree improvement, species selection, soil-site-species relationships, planting and cultivation methods, and survival of evergreens in windbreaks. Other research is being directed toward the protection of shelterbelts from losses caused by insects and diseases.

Some of the shelterbelts are now 30 years old. As they grow into maturity, management and protection become even more important. The trees are a growing investment that performs a valuable service for Great Plains people. It is the purpose of Lake States Station research to develop methods of establishment, management, and protection that will produce effective, hardy, and long-lived shelterbelts.

The Lake States Forest Experiment Station is one of 10 forest and range experiment stations operated under the direction of the Forest Service, U.S. Department of Agriculture. The Station has 12 experimental forests and 11 field headquarters in the States of North Dakota, Minnesota, Wisconsin, and Michigan. The Station headquarters are located in St. Paul, Minn.

The Northern Great Plains shelterbelt region is shown in the map at right (see key below). Federal, State, and private organizations cooperate in the study, establishment, and protection of shelterbelts because these living windbreaks offer a high return in soil and water conservation, field and farmstead protection, wildlife food and cover, and aesthetic values. Research data and materials are collected at the various nurseries and outplantings shown on the map.



LAKE STATES FOREST EXPERIMENT STATION

Shelterbelt Laboratory

Bottineau, North Dakota

A facility of the

FOREST SERVICE
U. S. DEPARTMENT OF AGRICULTURE

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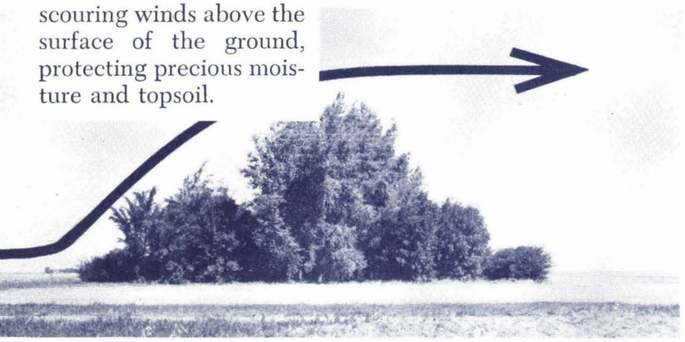
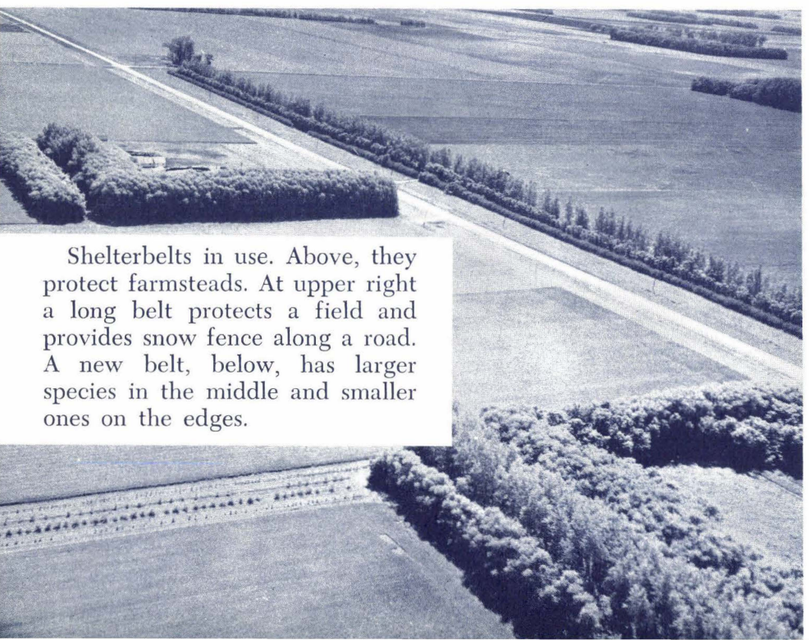
EXPERIMENT STATION

Research depends upon good communications among scientists and a strong reference library. The library-conference room is separated from the rest of the Shelterbelt Laboratory to afford quiet and comfortable conditions for discussions or study.

The staff has 6 laboratories fitted with modern equipment for analysis of soils and plant and animal tissues. Careful studies are made here of the data and materials that scientists collect from field shelterbelt experiments.

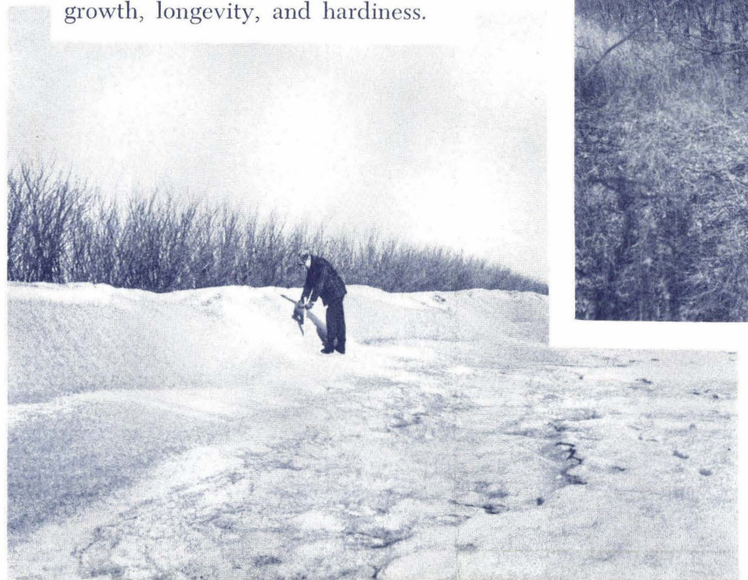
This end view shows the basic function of a shelterbelt. Long rows of sturdy trees and shrubs lift the main force of scouring winds above the surface of the ground, protecting precious moisture and topsoil.





Shelterbelts in use. Above, they protect farmsteads. At upper right a long belt protects a field and provides snow fence along a road. A new belt, below, has larger species in the middle and smaller ones on the edges.

Drifting snow dramatically illustrates the influence of shelterbelt. Dense plantings concentrate the snow in and near the trees. More open ones allow the snow to accumulate to leeward. Control of snow is important for the proper distribution of the moisture that it contains and for the protection of roads and buildings from heavy drifting. Shelterbelt scientists are interested in this protective characteristic of trees, as well as their growth, longevity, and hardiness.



Two Forest Service scientists measure the annual growth of a row of green ash trees in a North Dakota shelterbelt. Belts vary in width from 1 to 16 rows of trees, with a wide range of species composition. The Lake States Station is developing guidelines on performance of the various tree species on the different soils, in a variety of species mixtures, and in plantings of varying width.

Protection is an important feature in the Northern Great Plains shelterbelts. The blister beetle, below, is feeding upon a Siberian peashrub (Caragana). This is only one of many insects that feed in shelterbelts. Fungus diseases also create some problems. Research is needed to develop safe, effective, and economical controls to use when insects or diseases build up to serious proportions.